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10/773,261

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Gyana Ranjan Parija

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MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER

FREJD, RUSSELL WARREN

ART UNIT

PAPER NUMBER

2128

MAIL DATE

DELIVERY MODE

02/03/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/773,261 | Applicant(s) PARIJA ET AL. | |
| | Examiner Russell Frejd | Art Unit 2128 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 9-17 and 19-21 is/are allowed.
- 6) ☒ Claim(s) 5 and 8 is/are rejected.
- 7) ☒ Claim(s) 6, 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Examination of Application 10/773,261

1. Claims 1-17 and 19-21 of application 10/773,261, filed on 9-February-2004, are pending in the application. This communication is in response to the amendment received 19-November-2009. The 35 USC 101 and 102 rejections noted in the previous office action are withdrawn in view of the present amendment, and a 103 rejection is submitted herewith.

Claim Rejections under 35 U.S.C. § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering the objective evidence present in the application indicating obviousness or nonobviousness.

2.1 Claims 5 and 8 are rejected under 35 U.S.C. 103 as being unpatentable over Chiang et al., USPAP 2003/0220772.

2.2 Chiang et al. substantially disclose:

Claims 5 and 8: An apparatus for a global optimization comprising:

- a receiver to receive data for populating a min-max model (claim 5) [section(s) 0004];
- a first calculator to provide a plurality of minimum values (claims 5 and 8) [0004, 0014];
- a second calculator to locate a global optimum value, given a plurality of minimum values (claims 5 and 8)[0014];
- a transmission port to send said global optimum to at least one of a display device, a printer, and a memory (claims 5 and 8)[0024].

Also, claim 8 provides a memory containing data [deemed inherent to the discussion in 0024].

2.3 Chiang et al. do not specifically disclose a minimum-maximum problem, or min-max problem, as in claims 5 and 8. Min-max problems are stated in the present specification [p. 1, Ins. 8-9], as pertaining to “constrained optimization in any specific application.” Chiang et al. is directed to “seeking the best solution of an optimization problem, often expressed by a real vector, in the solution space which satisfies all stated feasibility constraints and minimizes (or maximizes) the value of an objective function” [section 0004]. In this manner, Chiang et al. solve general optimization problems by locating all of the possible local optimal solutions and then selecting from them the best solution, which represents the global optimal solution [sections 0014-0015]. It would have been obvious to person of ordinary skill in the art to modify Chiang et al. to perform the optimization of min-max problems as disclosed in the present invention because both of the inventions are directed toward avoiding getting trapped at local optimal solutions [see section 0007 of Chiang et al., and p. 13, ln. 17 through p. 15, ln. 4 of the

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present specification], which can negatively impact the computational efficiency of determining a global optimal solution.

Claim Objections

3. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable, pending resolution of any rejections noted above, if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The limitations considered allowable are:

Claim 6: The apparatus of claim 5, wherein at least one of said first calculator and said second calculator comprises a linear programming solver.

Claim 7: The apparatus of claim 5, wherein: said receiver comprises a memory interface to access a memory containing data; and a third calculator to convert the data accessed from said memory into a data structure appropriate for said first calculator and said second calculator and thereby populating said rain- max model.

Allowed Claims

4. Claims 1-4 and 9-21 are deemed allowable over the prior art of record at this time, pending resolution of any rejections noted above, because the prior art does not specifically claim, in regard to independent claims 1, 9 and 13: for a process, wherein is defined a linear functional form $y = f(X, c)$, where X comprises a set of independent variables $X = \{x_1, \dots, x_n\}$, c comprises a set of functional parameters $c = \{c_1, \dots, c_n\}$, and y comprises a dependent variable, where the independent variables set X is partitioned into two subsets, X_1 and X_2 , receiving data for said process [defined at p. 4, Ins. 4-13]; minimizing y with respect to X_1 [p. 4, ln. 11]; and maximizing y with respect to X_2 [p. 4, ln. 11], subject to a set of constraints, wherein said

maximizing y comprises a global optimum for said process [p. 4, Ins. 12-13]; and sending said global optimum to at least one of a display device, a printer, and a memory [p. 17 In. 20 through p. 18, In. 7].

Also, in regard to independent claim 14: a linear programming solver to calculate a periphery of a polyhedron representing a region of all points that satisfy a linear constraint in a minimum-maximum problem [p. 5, Ins. 15-19].

Dependent claims 2-4, 10-12, and 15-21 are deemed allowable as depending either directly or indirectly from independent claims 1, 9, and 14.

Remarks

5. The remarks made by applicant, on pages 8-11 of the present amendment, have been considered but are determined to not be persuasive for the following reasons:

Claim 5 of Chiang was not intended to be used to describe the present invention, and the Examiner regrets any confusion in the previous office action that could have been interpreted as relying on claim 5 of Chiang.

Also, Applicant's assertion that the present invention is directed to "minimum values" used to find a global optimal solution comprised of "maximum values" [Applicant's Remarks, p. 10, Ins. 1-3] has been determined to not be persuasive because the claims merely "locate a global optimum value" based on the minimum values. The claims do not specifically claim locating a "global optimum maximum value" as insinuated by Applicant's remarks. The Examiner respectfully points out that Chiang teaches "a point is a local optimum solution when it has a minimal objective function" [section 0222], i.e. the "minimum values" of the present invention, which are then used to select a global optimum solution. For this reason, the Examiner respectfully posits that the global optimal solution of the present invention is not

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specifically directed to a “maximum” value based on a plurality of “minimum” values, and therefore, is not patentably distinct from the Chiang reference.

Finally, the plain meaning (or term of art) of “min-max”, was addressed in the rejection of claims 5 and 8 above, and is therefore not considered to be persuasive.

Response Guidelines

6. A shortened statutory period for response to this action is set to expire **3 (three) months and 0 (zero) days** from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02, 710.02(b)).

6.1 Any response to the Examiner in regard to this non-final action should be

directed to: Russell Frejd, telephone number (571) 272-3779, Monday-Friday from 0530 to 1400 ET, **or** the examiner’s supervisor, Kamini Shah, telephone number (571) 272-2279. Inquires of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist (571) 272-2100.

mailed to: Commissioner of Patents and Trademarks
P.O. Box 1450, Alexandria, VA 22313-1450

or faxed to: (571) 273-8300

Hand-delivered responses should be brought to the Customer Service Window, Randolph Building, 401 Dulany Street, Alexandria, VA, 22314.

/Russell Frejd/
Primary Examiner AU 2128